

# A breath of fresh air in the mid-range segment

Most signal and spectrum analysis tasks do not require top of the range T&M equipment. Today's upper mid-range instruments offer features that just a few years ago were reserved for the premium segment. Two brand new models are the proof.

A new instrument generation is expected to outperform its predecessors and clearly demonstrate the technical advances that have been made since the previous generation. The R&S®FSV3000 and R&S®FSVA3000 signal and spectrum analyzers meet this expectation in all respects (Fig. 1). With better RF data, higher measuring speed and impressive features, they are ideal high-quality standard T&M instruments for use in the lab and automated test environments (ATE). They even master complex measuring tasks in wideband communications and A&D applications.

## Very good or even better

The R&S®FSV3000 and R&S®FSVA3000 models are identical in appearance and operation, but differ in their performance data and application focus.

The R&S®FSV3000 has been developed to perform complex measurements quickly and easily. Its high measuring speed and easy operation make it the right instrument for the lab and the production line. With an analysis

bandwidth of up to 200 MHz, it can capture and analyze two 5G NR carriers simultaneously.

With an analysis bandwidth of up to 400 MHz, a high dynamic range and a phase noise of  $-120$  dBc/Hz (at 1 GHz, 10 kHz offset), the R&S®FSVA3000 is moving beyond mid-range. Its range of applications includes linearization of power amplifiers, acquisition of short events and characterization of frequency agile signals.

## Automatic capturing of rare events

The event driven GUI of the R&S®FSV3000 and R&S®FSVA3000 makes it easy to capture rare events. The user simply has to select a triggering criterion such as an ACLR or limit line violation from a dropdown menu and then specify an action to be performed, for instance a screenshot or saving I/Q data (Fig. 2). The action is executed only if the event occurs, and recorded in a journal for later analysis.

The new one-button measuring function shortens instrument set-up time. At the press of a button, the parameters relevant for display, e.g. center frequency, span and level range, are adjusted to the applied signal; for a pulsed signal, the gate sweep parameters are also adjusted. For standard compliant measurements such as ACLR or spectrum emission mask (SEM) on communications signals, the one-button measuring function selects the appropriate standard-specific settings for channel spacing, channel bandwidth, measuring duration, etc.

For complex measuring cycles in an automated production line, SCPI programs on external PCs control the measuring instruments. The built-in SCPI recorder speeds up the programming of these control scripts considerably. All manual user entries are translated into SCPI commands that can be saved natively or exported in the syntax of commonly used programming languages and tools such as C++, Python and MATLAB®.

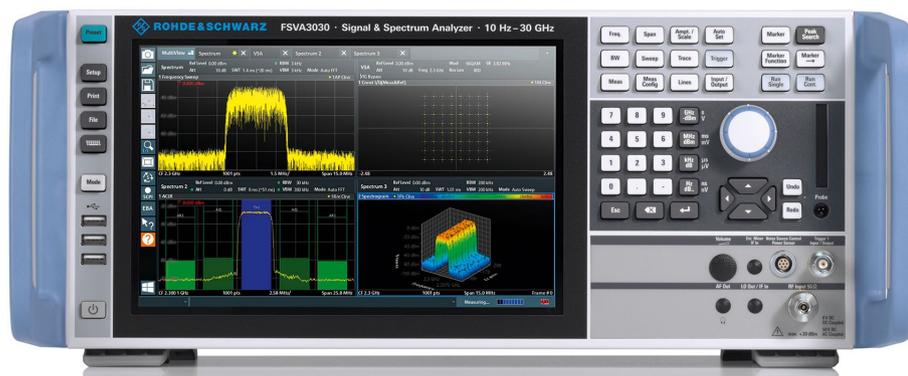


Fig. 1: The R&S®FSV3000 and R&S®FSVA3000 are redefining the mid-range segment. Their best-in-class performance data and ease of operation are setting new standards.

Many RF measuring tasks require a combination of signal generator and spectrum analyzer, whereby the settings of the two instruments often need to be coordinated. If, for example, the characteristics of an amplifier need to be measured for certain mobile signals, then the generator and analyzer must have the same frequency and level settings. The intelligent signal generator control unit of the R&S®FSV3000 and R&S®FSVA3000 automatically performs this synchronization. The analyzer directly controls the generator\* via the coupling manager. Changes in frequency and level on the analyzer are transferred to the generator. The generator's GUI can be displayed and operated on the analyzer so that the user can access the entire setup from one instrument. In addition, the instruments' SCPI recorders can be coupled to create a combined remote control program.

### High-speed analysis

The R&S®FSV3000 and R&S®FSVA3000 have been developed for measuring applications in automated test systems. They are extremely fast at performing spectrum measurements, modulation analyses and changing modes and frequencies. FFT-based ACLR and SEM measurements are faster than swept measurements and do not have a negative effect on the dynamic range. The portfolio of demodulation options covers the very latest standards, including 5G NR (Fig. 3), LTE and WLAN 802.11ac and ax. Universal measuring applications such as noise figure, phase noise, vector signal demodulation and amplifier measurements are also available.

In cloud based test systems, signal analysis is performed on servers. This requires large quantities of I/Q data to be transferred. The R&S®FSV3000 family has also been optimally designed for this operating mode. Its signal processing architecture and the optional 10 GBit/s LAN interface make it possible to transfer I/Q data to the network even

at the high sampling rates required for large analysis bandwidths.

**Summary:** The R&S®FSV3000 and R&S®FSVA 3000 provide many attractive functions for measuring tasks in the lab and production as well as unrivaled RF performance and measuring speed for this class. Thanks to

autoconfiguration, event based actions and an SCPI recorder, the analyzers simplify today's increasingly complex everyday measurement tasks. As a frontend in an ATE with cloud based signal analysis, the analyzers stream wideband I/Q data to the cloud computer via the 10 Gbit/s LAN interface.

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\* Currently possible with the R&S®SMW200A and R&S®SMBV100B generators.

The R&S®FSV3000/FSVA3000 will be available starting March 27, 2019.

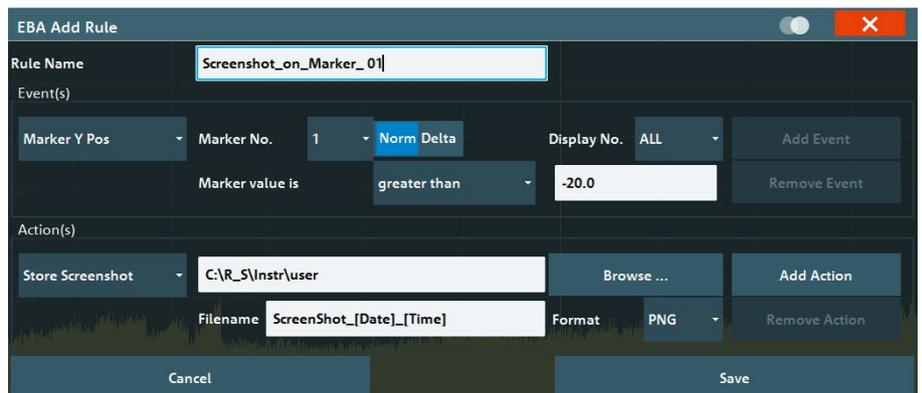


Fig. 2: The event based action function enables efficient troubleshooting. User-defined rules for triggering actions, e.g. a screenshot, are conveniently defined on the screen.

Fig. 3: The R&S®FSV3000 and R&S®FSVA3000 are ready for 5G NR. At 28 GHz, EVM values of better than 1 % are achieved for a 100 MHz wide signal.

